

**BEFORE
THE PUBLIC SERVICE COMMISSION OF
SOUTH CAROLINA**

DOCKET NO. 2018-318-E

IN THE MATTER OF:

| | |
|----------------------------------------------|----------------------------------|
| Application of Duke Energy Progress, LLC) | DIRECT TESTIMONY OF |
| For Adjustments in Electric Rate Schedules) | JON F. KERIN FOR |
| And Tariffs) | DUKE ENERGY PROGRESS, LLC |

1 **I. INTRODUCTION**

2 **Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND CURRENT**
3 **POSITION.**

4 A. My name is Jon F. Kerin. My business address is 411 Fayetteville Street,
5 Raleigh, North Carolina, 27601-1849. I am employed by Duke Energy Business
6 Services, LLC, as Vice President, Coal Combustion Products (“CCP”)
7 Operations, Maintenance and Governance. In this docket, I am testifying on
8 behalf of Duke Energy Progress, LLC (“DE Progress” or the “Company”). As
9 more fully discussed below, my responsibilities have included providing
10 governance and operations support leadership to Duke Energy Corporation’s
11 regulated operating companies, including DE Progress. Relevant to this
12 testimony, during 2014, I held the position of General Manager in the Ash Basin
13 Strategic Action Team – referred to as “ABSAT.” I was named to my current role
14 in 2015. In July 2018, I assumed additional responsibilities in the CCP
15 organization for the Operations and Maintenance division.

16 **Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND**
17 **PROFESSIONAL EXPERIENCE.**

18 A. I have a Bachelor of Science degree from the University of Maryland. I have over
19 30 years of experience in the electric utility industry, where I have been involved
20 in various complex and challenging projects. In addition to my CCP experience,
21 my background includes experience at various nuclear electric generating power
22 plants and in other corporate functions. Prior to the merger of Progress Energy,
23 Inc. and Duke Energy, I was the Director of the Project Management Center of

1 Excellence for Progress Energy, Inc. After the merger, I became General
2 Manager, Performance Improvement in the Project Management and Construction
3 Department before transitioning to the ABSAT team. In these roles, I worked
4 with new project implementation and construction teams to ensure that major
5 compliance projects and major construction projects were planned, executed, and
6 completed in a reasonable, prudent, and cost-effective manner as required by
7 regulatory bodies in Duke Energy's regulated jurisdictions. In these roles, I
8 worked on and provided advice and leadership to over a dozen major projects
9 with combined costs exceeding \$5 billion. I also led efforts to develop and
10 establish enterprise-wide procedures to ensure all regulated projects were
11 completed in a prudent and cost-effective manner.

12 **Q. WHAT WAS THE PURPOSE OF THE ASH BASIN STRATEGIC ACTION**
13 **TEAM?**

14 A. The ABSAT team was the umbrella organization created for Duke Energy
15 companies to address the laws, regulations, and orders concerning the
16 management of coal-combustion residuals ("CCR").¹ These new compliance
17 requirements apply to electric generating sites with new and existing CCR
18 landfills and surface impoundments (collectively "CCR units"), and impose new
19 obligations regarding landfill design, structural integrity design and assessment
20 criteria for CCR basins, groundwater monitoring and protection procedures,
21 closure of impoundments, and operational and reporting procedures for the

¹ CCR refers to fly ash, bottom ash, boiler slag, and flue gas desulfurization materials generated from burning coal for the purpose of generating electricity by electric utilities. 40 C.F.R. § 257.53.

1 disposal and management of CCRs. This work has now been absorbed into the
2 CCP organization.

3 During my work on the ABSAT team, I spent approximately 3,000 hours
4 working exclusively on CCR issues. During this time, I reviewed and became
5 knowledgeable on relevant state and federal regulations dealing with CCR issues
6 as detailed further in my testimony and as set out in Kerin Exhibit 1. I also
7 studied and became familiar with historical industry practices and standards to
8 comply with these regulations. As part of this process, I interviewed legacy
9 employees in Fossil Hydro Operations, Environmental Health and Safety, and
10 Central Engineering who worked at, and with, coal combustion generating units
11 and CCR handling sites. I reviewed historical company documents dealing with
12 these facilities and sites to gain an understanding of how CCR handling standards
13 inside and outside of the Company have developed over time. I also interviewed
14 legacy employees at other Southeast utilities including Dominion Energy, AEP,
15 TVA and Southern Company.

16 As part of my duties on the ABSAT team, I toured and inspected every
17 CCR basin in Duke Energy's North and South Carolina jurisdictions. I also
18 toured and examined other CCR units at Duke Energy's Midwest sites, and
19 Dominion Energy, AEP, TVA, and Southern Company sites. During my tenure
20 on the ABSAT team, I developed CCR evaluations for each of Duke Energy's
21 CCR sites and, where applicable, worked on developing comprehensive work
22 plans when work was needed on any of those sites. In the course of my duties, I
23 also interfaced with other utilities to discuss and enhance mutual understandings

1 on evolving industry standards relating to CCR issues, and shared and received
2 best practices across the electric industry. I developed an industry peer group to
3 discuss CCR issues, which meets semi-annually and includes companies such as
4 Dominion and Southern Company. In this capacity, I also gained an
5 understanding and knowledge of coal ash management practices at utilities across
6 the country.

7 **Q. WHAT ARE YOUR PRIMARY RESPONSIBILITIES AS THE VICE**
8 **PRESIDENT, OPERATIONS, MAINTENANCE, AND GOVERNANCE?**

9 A. I am responsible for regulatory affairs, operations support, and other centralized
10 CCR functions. My team works to define, establish, and maintain fleet CCP
11 standards, programs, processes, and best practices within functional areas for all
12 fossil plant sites. My team also oversees site operations and maintenance
13 (“O&M”) of CCP facilities, including CCR and high-hazard dam operations and
14 maintenance, production landfills, decommissioning and demolition, and
15 byproducts management.

16 In my current role, virtually 100 percent of my time is dedicated to CCR
17 oversight, compliance, operations, maintenance, and project execution activities.
18 I have continued to review and study evolving rules and regulations related to
19 CCR issues. I have also maintained my presence in industry peer groups
20 regarding CCR issues and continue to help monitor, develop, and implement
21 industry best practices and standards for CCR issues.

1 **Q. HAVE YOU EVER TESTIFIED BEFORE A REGULATORY BODY?**

2 A. Yes. I filed direct testimony regarding CCR issues in DE Progress' rate case in
3 South Carolina in Docket 2016-227-E and appeared before the Public Service
4 Commission of South Carolina in October 2016 in connection with that case. I
5 also filed direct and rebuttal testimony regarding CCR issues in DE Progress' and
6 Duke Energy Carolinas, LLC's ("DE Carolinas") recent North Carolina rate cases
7 in Docket Nos. E-2, Sub 1142 and E-7, Sub 1146, respectively, and testified
8 before the North Carolina Utilities Commission in connection with those cases.

9 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

10 A. DE Progress is seeking recovery of CCR expenses incurred from July 2016
11 through August 2018 and estimated costs to be incurred September 2018 through
12 December 2018 related to compliance with applicable regulatory requirements.
13 The purpose of my testimony is to explain those regulatory requirements and to
14 explain how our compliance actions and decisions, including our current plans to
15 meet existing legal requirements, have been reasonable, prudent, and cost-
16 effective approaches to comply with those regulatory requirements.

17 **Q. PLEASE BRIEFLY SUMMARIZE YOUR TESTIMONY.**

18 A. DE Progress has become subject to both federal and state regulatory requirements
19 that mandate closure of its ash basins and other ash storage areas. Since the early
20 1900s, DE Progress has disposed of CCR in compliance with then-current
21 regulatory requirements and industry practices. Until the 1950s, CCR were either
22 emitted through, in the case of fly ash, smokestacks or, in the case of bottom ash,
23 manually removed from boilers and stored in fill areas. Since that time, the

1 industry transitioned to wet sluicing using water to remove ash from boilers, and
2 to clean the electrostatic precipitators (“ESP”), preventing ash from being emitted
3 through the smokestacks. This effluent, as well as flue gas desulfurization
4 (“FGD”) blowdown, was then diverted to ash basins, or impoundments. DE
5 Progress has 19 ash basins in the Carolinas.

6 In the mid-1970s, the enactment of the Clean Air Act (42 United States
7 Code §7401 et seq.) and its subsequent amendment in the 1990s required electric
8 utilities to capture more CCRs through the use of ESP or bag houses and FGD
9 blowdown. The Clean Water Act of 1972 (33 United States Code §1251 et seq.),
10 and the subsequent creation of the National Pollutant Discharge Elimination
11 System (“NPDES”) permitting system, made wet ash handling and ash basins the
12 primary lawful and effective way to meet CCR needs and environmental
13 requirements from 1974 until 2015.

14 In June 2010, the United States Environmental Protection Agency
15 (“EPA”) proposed national minimum criteria to regulate the disposal of CCRs and
16 the operation and closure of active CCR landfills and existing and inactive CCR
17 surface impoundments. Approximately five years later, the EPA published the
18 final CCR Rule in the Federal Register in April 2015.

19 In South Carolina, DE Progress entered into a Consent Agreement with
20 the South Carolina Department of Health and Environmental Control
21 (“SCDHEC”) in July 2015. Pursuant to this agreement, DE Progress agreed to
22 excavate its ash basins and ash storage areas at the Robinson Steam Station in
23 Darlington County, South Carolina. It should be noted that other South Carolina

1 utilities are closing their ash basins in a similar fashion and also pursuant to
2 Consent Agreements with and approval from SCDHEC.

3 Also, in 2014, the state of North Carolina enacted the Coal Ash
4 Management Act of 2014 (“CAMA”), which requires that all ash basins in North
5 Carolina be closed, either through excavation or via the cap-in-place method. In
6 many respects, the state law mirrors the federal CCR Rule.

7 All of DE Progress’ ash basins must be closed under the CCR Rule, South
8 Carolina regulatory oversight, and closure plan approvals, and/or CAMA. The
9 Company has begun the process of closing, or submitting plans to close, its ash
10 basins in accordance with the program with the most restrictive requirements.
11 There is a great deal of duplication and interaction between the CCR Rule and
12 state regulatory requirements. As I explain below in my testimony, many of the
13 actions Duke Energy will take will serve multiple compliance purposes. In fact,
14 many actions and draft rules applicable to many utilities, not just Duke Energy,
15 were already being developed prior to 2014, and we are now in another wave of
16 evolution in environmental regulation pertaining to ash. *See* Kerin Exhibit 2. In
17 response to these new requirements addressing CCR disposal activities, the
18 Company is adding dry fly ash, bottom ash, and FGD blowdown handling
19 systems to operating coal-fired plants that are not already so equipped. The
20 Company is also modifying all active and decommissioned plants to divert storm
21 water and low-volume wastewater away from the basins.

22 Accordingly, the Company is requesting recovery of the incremental
23 compliance costs related to coal ash pond closures incurred starting July 2016 to

1 August 2018, and expected costs from September 2018 to December 2018 as
2 explained in more detail by Witness Bateman. My testimony and exhibits
3 demonstrate that both of these incurred and expected compliance costs are
4 reasonable, prudent, and cost-effective given the individual facts and
5 circumstances at each power plant and ash basin site at issue.²

6 **Q. HOW IS YOUR TESTIMONY ORGANIZED?**

7 A. In this Section I, I have provided information concerning my background and the
8 purpose of my testimony. In Section II, I provide an overview of the generation
9 resources, including coal-fired generation, that the Company has used to reliably
10 and efficiently serve customers for over 100 years of its existence. I explain that
11 CCR are the natural byproduct of burning coal to generate electricity. I discuss
12 the Company's past practices for the storage and disposal of CCR, and I explain
13 that its practices have been in accordance with the electric power industry's
14 prudent standards and applicable laws, regulations, and permit requirements as
15 they have existed over time. In Section III, I discuss the new requirements
16 imposed on the Company under the new CCR compliance requirements. In
17 Section IV, I discuss the Company's plans to comply with the CCR compliance
18 requirements, the required regulatory approvals and permits for DEP compliance
19 plans, including timing and implementation issues, and costs incurred to date and
20 expected over the next several years. I also explain and demonstrate how each of
21 the Company's historical and ongoing CCR compliance costs are reasonable,

² This case excludes any fines or penalties incurred by DE Progress related to ash basin closure or management.

1 prudent, and cost-effective given the individual facts and circumstances at each
2 power plant and ash basin site at issue.

3 **Q. ARE YOU PROVIDING ANY EXHIBITS WITH YOUR TESTIMONY?**

4 A. Yes, I have attached 10 total exhibits, described below, as well as an appendix:

5 Kerin Exhibit 1: Statutes and Regulations (listing of relevant coal ash
6 environmental regulations);

7 Kerin Exhibit 2: CCR Rule (text of the Federal CCR Rule);

8 Kerin Exhibit 3: Site Locations NC and SC (map of coal ash facilities);

9 Kerin Exhibit 4: Site Facts (site-specific background information);

10 Kerin Exhibit 5: Ash Basin Information (site-specific information about ash units)

11 Kerin Exhibit 6: Responses to Rule Changes Through the Decades DEP
12 (summary of DE Progress' compliance with evolving environmental regulations);

13 Kerin Exhibit 7: Beneficiation Year 2015 thru August 2018 (summary of
14 beneficiation at DE Progress Sites);

15 Kerin Exhibit 8: Graphics Cap-in-Place and Landfill (graphical depiction of cap-
16 in-place and landfill closure methodologies);

17 Kerin Exhibit 9: Closure Plans (site-specific closure plans and engineering
18 reports); and

19 Kerin Exhibit 10: Components of 2015-2018 Recovery Request (summary of
20 costs and regulatory drivers relevant to DE Progress' application).

1 **II. DE PROGRESS' GENERATION RESOURCES**

2 **Q. PLEASE PROVIDE AN OVERVIEW OF THE COMPANY'S ELECTRIC**
3 **GENERATION ASSETS.**

4 A. DE Progress has provided reliable electric generation for decades to its retail and
5 wholesale customers in South Carolina and North Carolina from a diverse
6 portfolio of generating assets including those that generate electricity using coal,
7 nuclear fuels, natural gas, hydro flows, and solar photovoltaic energy sources.
8 Until recently, coal has been the historic "go-to" fuel choice for base-load, least-
9 cost reliable service. Accordingly, in South Carolina and North Carolina, the
10 Company has operated eight coal-fired generating facilities with CCR units that
11 contain historically produced CCR directly resulting from the coal combustion
12 process. These eight coal-fired DE Progress generating facilities have 19 CCR
13 basins that date back to the early 1950s and were an integral part of historical
14 coal-fired power generation at these sites.

15 **Q. WHAT IS THE CURRENT STATUS OF THE COMPANY'S COAL-**
16 **FIRE GENERATING FACILITIES?**

17 A. Of the eight coal-fired DE Progress generating facilities with ash basins, coal-
18 powered electric generation has since ceased at five of these stations, including
19 the Cape Fear, H.F. Lee, Robinson, Sutton, and Weatherspoon Plants. Refer to
20 Kerin Exhibit 3 for the geographical location of the eight coal-fired generating
21 facilities with ash basins in the DE Progress service territory.

1 **Q. WHAT ARE COAL COMBUSTION RESIDUALS?**

2 A. CCR are byproducts produced from the burning of coal in coal-fired power
3 generation plants and include fly ash, bottom ash, boiler slag, and FGD material.
4 Fly ash and bottom ash are direct byproducts of the coal combustion process. Fly
5 ash is a very fine, powdery material composed mostly of silica produced from the
6 burning of finely ground coal in the boiler. Bottom ash is a coarse, angular ash
7 particle that is too large to be carried up into the smoke stacks, so it forms in the
8 bottom of the coal furnace. Bottom ash makes up approximately 15 percent of the
9 total ash produced. In the early years of operation, bottom ash was manually
10 collected at the bottom of the boiler, and then transported to an ash storage
11 location. Later, the industry utilized a water sluice process to efficiently transport
12 the bottom ash to ash storage basins. In the early years, fly ash went directly out
13 the smoke stack. The industry later employed collection of the fly ash using
14 electrostatic precipitators and bag houses in order to improve air emissions, where
15 the ash was then efficiently water sluiced to an ash basin. As I explain above, DE
16 Progress' coal-fired generation facilities either have been or are being modified to
17 incorporate dry fly ash and/or dry bottom ash handling. Additional CCR flow in
18 the form of wastewater is produced by the operation of FGD systems at specific
19 operating coal-fired sites. All of the types of CCR mentioned above are
20 byproducts of the electricity production process lifecycle at coal-fired generation
21 plants.

1 **Q. PLEASE PROVIDE A HISTORY OF DE PROGRESS' ELECTRIC**
2 **GENERATION RELYING ON COAL AS THE FUEL SOURCE.**

3 A. The Company's electric power generation from burning coal dates back to the
4 1920's. As an example, the Cape Fear Plant in Moncure, North Carolina began
5 commercial operation in 1923 with an ultimate generating capacity of 316
6 megawatts ("MW"). Kerin Exhibit 4 provides details regarding the commercial
7 operation date, generation capacity (MW), and retirement date, if applicable, for
8 the eight DE Progress coal-fired generating stations with ash basins in the
9 Carolinas.

10 All of these coal plants produced CCR, fly ash, and bottom ash, as direct
11 byproducts of the coal combustion process. In the 1950's the electric utility
12 industry began to efficiently transport bottom ash by water sluicing to constructed
13 surface impoundments, which we commonly refer to as ash basins. Some of DE
14 Progress' older ash basins include the 1950 and 1955 ash basins at the H.F. Lee
15 Plant and the 1956 ash basin at the Cape Fear Plant. Kerin Exhibit 5 provides
16 details regarding when DE Progress ash basins were constructed, their estimated
17 content of ash in tons, and when they were taken out of service, if applicable. The
18 CCR contained in these basins represent the byproduct of decades of reliable coal-
19 fired generation at these sites and a process step in the electricity generation life
20 cycle.

1 **Q. HOW HAVE ENVIRONMENTAL COMPLIANCE OBLIGATIONS**
2 **RELATED TO CCR MANAGEMENT EVOLVED OVER TIME?**

3 A. Environmental regulations related to CCR management have evolved
4 significantly over time, affecting how the Company has operated its coal-fired
5 stations in compliance with new and evolving environmental obligations. At each
6 step in the environmental regulatory evolution process, DE Progress was in line
7 with industry standards and reasonably and prudently managed CCR and its coal
8 ash basins.

9 Before the Clean Air Act was amended in 1970, the only type of CCR
10 collected at the Company's plants was bottom ash. Bottom ash was sometimes
11 stored in basins and sometimes placed dry on the land surface in "lay of land"
12 areas, which was lawful at the time. After new Clean Air Act requirements were
13 put in place, the utility industry, including DE Progress, added electrostatic
14 precipitators to coal-fired plants in the 1970s to reduce air emissions of fly ash.
15 The collection of fly ash significantly increased the volume of CCR being handled
16 at the plants, giving rise to the need for larger basins and ash handling systems.
17 Additionally, since the 1990 Clean Air Act amendments, a greater emphasis on
18 sulfur emissions control has prompted many coal burning power plants to install
19 FGD units (also known as "scrubbers"). FGD scrubbers generate byproducts,
20 primarily gypsum, which are classified as a type of CCR.

21 In 1972, the Federal Water Pollution Control Act, now known as the Clean
22 Water Act ("CWA"), was amended to provide a new comprehensive program for
23 regulating discharge of pollutants into the waters of the United States and

1 regulating quality standards for surface waters. The CWA resulted in the
2 establishment of a systematic permit system to monitor water quality and to
3 provide specific limits for the flow and content of process water leaving these ash
4 basins. Many of the Company's ash basins (at least one at each power plant) were
5 operating before the passage of the CWA amendments in 1972, which created the
6 NPDES permitting program. These plants subsequently received NPDES permits
7 from South Carolina and North Carolina after the states received authority from
8 EPA to issue permits.

9 In accordance with the CWA, EPA promulgated Effluent Limitations
10 Guidelines ("ELGs") for the Steam Electric Power Generating industry category
11 in 1974. The Development Document for the 1974 rule states that most coal-fired
12 plants across the industry used wet ash handling and ash basins for treatment of
13 ash handling wastewater, although some plants employed other methods for site-
14 specific reasons, such as space constraints. In the 1974 rule, the EPA set limits
15 based on Best Practicable Control Technology Currently Available ("BPT") and
16 Best Available Technology Economically Achievable ("BAT") for fly ash
17 transport water and bottom ash transport water. In both cases, the limits were
18 based on the use of wet ash handling and treatment in ash basins. In 1982, the
19 EPA withdrew the BAT limitations on fly ash transport water and left the limits
20 on bottom ash transport water unchanged.³ The ELGs for the Steam Electric
21 Power Generating category were not amended again until 2015. As a result, from
22 1974 to 2015, ash basins were a lawful and effective way of meeting the

³ The rule did prohibit the discharge of fly ash transport water at new facilities.

1 wastewater treatment requirements under the CWA. In 2015, the EPA finalized
2 new ELGs that adopted a zero discharge requirement for both fly ash and bottom
3 ash transport water at existing facilities. Meeting these limits effectively requires
4 converting to dry ash handling or ceasing plant operations.

5 Before 2015, CCRs were not regulated under the Resource Conservation
6 and Recovery Act ("RCRA"). CCRs are classified under RCRA as a "special
7 waste." Under RCRA § 3001(b)(3)(A) (known as the Bevill Amendment), fossil
8 fuel combustion waste and several other waste categories were initially exempt
9 from regulation as hazardous waste under RCRA Subtitle C. The EPA was
10 required to assess fossil fuel combustion waste and the other types of exempted
11 waste and submit a formal report to Congress on its findings. The EPA was then
12 required to make a final regulatory determination as to whether the special waste
13 should be regulated as a hazardous waste. The EPA published rules in 1993 and
14 2000 concluding that CCR should not be regulated as hazardous waste. On
15 December 22, 2008, a large coal ash spill occurred at the TVA power plant in
16 Kingston, Tennessee. While this event prompted the industry to take note of the
17 causes for the TVA spill from an operational perspective, the event also prompted
18 the EPA to revisit its determination regarding CCR. On June 21, 2010, the EPA
19 proposed regulations under RCRA to address the risks from the disposal of CCR
20 generated from the combustion of coal at electric utilities and independent power
21 producers. This proposal contained three regulatory options. Under the first, the
22 EPA proposed to list CCR as special wastes subject to regulation under Subtitle C
23 (hazardous waste) of RCRA when they are destined for disposal in landfills or

1 surface impoundments. Under the other two options, the EPA proposed to
2 regulate disposal of such materials under Subtitle D (non-hazardous waste) of
3 RCRA by issuing national minimum criteria. Because the proposals were very
4 different, it was difficult for the utility industry, including the Company, to
5 predict the timing and methods that would be required under the new rule for
6 closing ash basins. The rule was not finalized until 2015 when the EPA
7 announced its selection of the Sub-Title D option, regulating CCR as non-
8 hazardous waste. Additional details about the CCR Rule are set out below.

9 Before the CCR Rule, CCR management was regulated under South
10 Carolina state law by statutes and regulations dealing with water quality
11 protection and solid waste management. Ash basins were regulated through dam
12 safety regulations and NPDES permits. Use of ash removed from ash basins was
13 regulated by rules for distribution of residual wastewater solids, which required a
14 permit for the use of removed ash. Construction and operation of landfills were
15 governed by solid waste rules, and beneficial use of dry ash for structural fill was
16 regulated by provisions of the solid waste rules.

17 As noted above, in July 2015, the Company entered into the Robinson
18 Consent Agreement (“Consent Agreement”) with SCDHEC, which addressed
19 future ash management at the Robinson plant. The Consent Agreement requires
20 ash excavation of the 1960 lay-of-land ash storage area, located south of the ash
21 basin. The Consent Agreement also includes provisions to initiate permitting of
22 an onsite lined CCR landfill to store the excavated ash from the Robinson Plant’s
23 ash basin and lay-of-land area.

1 In 2014, the North Carolina General Assembly passed CAMA, which,
2 among other things, requires the closure of ash basins in North Carolina according
3 to a defined schedule.

4 Compliance with each phase of new environmental regulatory
5 requirements that I have discussed required DE Progress to modify its operations
6 and incur additional expenditures. Kerin Exhibit 6 graphically depicts how these
7 regulations and requirements changed over time and how DE Progress reasonably
8 and prudently responded to each of those changes.

9 **Q. HOW DID THESE EVOLUTIONS IN ENVIRONMENTAL**
10 **OBLIGATIONS IMPACT CCR PRODUCTION AND STORAGE AT THE**
11 **COMPANY’S COAL-FIRED GENERATION FACILITIES?**

12 A. Both the volume and characteristics of CCR managed at the Company’s facilities
13 have changed in response to changes in air emissions control requirements,
14 beginning with the use of electrostatic precipitators to capture fly ash. As the
15 coal-fired generating plants addressed evolving air emissions requirements,
16 modifications such as the addition of selective catalytic reduction equipment to
17 control emissions of nitrogen oxides and FGD systems were made to many of DE
18 Progress’ coal-fired generating plants. The addition of FGD systems affected the
19 existing ash basins by directing FGD blowdown flow to the CCR basins, which
20 represented a new additional CCR flow. At certain sites, such as at the Asheville
21 Plant, newly-constructed engineered wetlands were built within the footprints of
22 the CCR basins to process the FGD blowdown flow. At other sites, such as the
23 Roxboro Plant, FGD forward flow and settling ponds were built within the

1 footprint of the ash basins to process the new CCR flows. Further, as a result of
2 new FGD systems being added, limestone pile run-off flows and gypsum pile run-
3 off flows were typically also directed to the existing ash basins.

4 Consistent with the rest of the industry, as recognized by the EPA in its
5 ELGs, the Company has relied primarily on ash basins to treat these waste
6 streams, at least as a final step. The ash basins have been effective at treating
7 wastewater to meet NPDES permit limits. In the absence of any regulatory
8 directive to do so, the Company reasonably did not pursue and should not have
9 pursued regulatory closure or retrofitting for any site that was still generating ash
10 and that maintained its NPDES permit. However, the South Carolina Consent
11 Agreements in 2014 and 2015 established a new set of procedures for closure
12 plans for plants in South Carolina. In compliance with the CCR Rule and state
13 regulatory requirements, the Company has now prepared closure plans or site
14 analysis and removal plans, as applicable, for all of its ash basins.

15 Historically, the Company has invested in conversion to dry ash handling
16 at certain plants when it was called for by site-specific conditions. For example,
17 in 1990, DE Progress converted to dry fly ash handling at Roxboro given that site
18 specific conditions warranted the conversion. Following the promulgation of the
19 CCR Rule passage of CAMA, however, the Company is converting to full dry ash
20 handling at all operating plants as required by those requirements and as the only
21 viable alternative to plant closure. This involves both installing new equipment
22 and securing disposal capacity. The ash basins are a part of the coal-fired
23 generation process at the sites and provide dilution, settling and/or retention

1 functions for other power plant process water flows, such as low volume
2 wastewater, coal pile run-off, landfill leachate, and FGD wastewater.
3 Additionally, all plant discharges will be rerouted away from ash basins at retired
4 and active sites.

5 DE Progress has also historically pursued opportunities to sell ash for
6 beneficial reuse and will continue to do so as feasible. As the regulatory
7 requirements for ash reuse tightened, the Company limited its sale of ash to
8 situations in which compliance could be carefully monitored.

9 In summary, beyond the storage of fly ash and/or bottom ash, the
10 operation of ash basins has historically evolved to accept new CCR flows
11 resulting from FGD modifications required to address air emissions and also to
12 accept other non-CCR process flows, such as coal pile run-off and low volume
13 wastewater. The construction and use of the ash basins is the final step in the
14 generation process that has resulted in reliable, efficient, coal-fired electricity in
15 the Carolinas for many decades.

16 **Q. IS THERE ANY BENEFICIAL REUSE FOR THE CCRS?**

17 A. Yes. As referenced above, Duke Energy has endeavored across its coal-fired
18 generating fleet to maximize the beneficial use of production ash and to reclaim,
19 where possible, stored ash for sale for beneficial use. Ash beneficiation began in
20 DE Progress in 1998 at the Roxboro Station. From January 2016 through August
21 2018, 30 percent of the DE Progress fleet production ash, or approximately
22 331,000 tons, was sold for beneficial reuse to produce products such as a
23 replacement for Portland Cement, bricks, and blocks. It should be noted that the

1 beneficial uses of ash for products are limited based on the quality of the ash
2 produced or stored, particularly the carbon content, and the regional market
3 demand. Also, beneficial use opportunities as a structural fill are limited based on
4 specific regional projects that are in need and by statutory and regulatory
5 requirements. Please refer to Kerin Exhibit 7 for details on sales for beneficial
6 use of production ash and stored ash in the Carolinas.

7 **Q. WERE THE COMPANY'S CCR HANDLING PRACTICES IN**
8 **ACCORDANCE WITH INDUSTRY PRACTICE AND REGULATORY**
9 **REQUIREMENTS?**

10 A. Yes. In 1988, the EPA submitted its Report to Congress on Wastes from the
11 Combustion of Coal by Electric Utility Power Plants ("1988 Report"). The 1988
12 Report is a comprehensive assessment of the electric utility industry's use of coal
13 and management of CCR up to that point in history. The 1988 Report found that
14 80 percent of CCR in the industry was being treated and stored in surface
15 impoundments or disposed of in landfills. Of those units, only 40 percent were
16 lined, either with a synthetic, clay, or composite liner. Historically, surface
17 impoundments were the single most widely used treatment and storage method
18 for CCR. At the time of the 1988 Report, landfilling of CCR was increasingly
19 common. As of 1988, Duke Energy was employing both surface impoundments
20 and landfills, which the 1988 Report noted were the most commonly used types of
21 treatment, storage, and disposal units used by the industry.

22 In the preamble to the CCR Rule, the EPA provided an updated
23 assessment of the coal-fired electric power industry. The CCR Rule details that in

1 2012 alone, over 470 coal-fired electric generating facilities burned over 800
2 million tons of coal, generating approximately 110 million tons of CCR in 47
3 states and Puerto Rico. In 2012, approximately 40 percent of the CCR generated
4 were beneficially used, with the remaining 60 percent treated and stored in CCR
5 surface impoundments; of that 60 percent, approximately 80 percent was stored in
6 onsite basins and landfills. Across the United States, CCR disposal currently
7 occurs at over 310 active onsite landfills, averaging over 120 acres in size with an
8 average depth of 40 feet and at over 375 active onsite surface impoundments.
9 Stated differently, the Company is re-using (selling) and storing CCR in the same
10 manner and at approximately the same percentages as the coal-fired utility
11 industry's national averages. Duke Energy's practices have been and continue to
12 be consistent with those of the industry.

13 Similar to the industry, DE Progress has onsite CCR landfills that are
14 actively receiving production fly ash and some bottom ash, at specific coal-fired
15 generating sites, including the Mayo and Roxboro Plants in the Carolinas. Also
16 similar to the industry, DE Progress has active ash basins that will receive bottom
17 ash, and some fly ash, at specific coal-fired generating sites through first quarter
18 2019. These sites include the Asheville Plant, the Mayo Plant, and the Roxboro
19 Plant in the Carolinas. The ash handling practices for ash basins and ash landfills
20 in the Carolinas are consistent with the applicable regulatory requirements that
21 were in effect during the history of these CCR units.

1 **Q. ARE THE COMPANY’S CCR STORAGE AND HANDLING**
2 **CONSISTENT WITH THE PRACTICES OF OTHER DUKE ENERGY**
3 **AFFILIATES?**

4 A. Yes. The Company’s CCR storage and handling practices are consistent across
5 the Duke Energy fleet, including coal generation located in Florida and in the
6 Midwest. Duke Energy as it exists today has been formed over the years through
7 the mergers of several utilities with independently operated coal-fired generation,
8 including the Cinergy Corporation in 2006 and Progress Energy, Inc. in 2012.
9 Indeed, going farther back in time, Progress Energy, Inc. was created in 2000
10 from the merger of legacy utilities Carolina Power & Light (“CP&L”) and Florida
11 Power Corporation (“FPC”). Similarly, Cinergy Corporation was created in 1994
12 by the merger of legacy utilities Public Service Indiana (“PSI”) and Cincinnati
13 Gas & Electric Company (“CG&E”). Yet, the historical and current CCR
14 handling and use of CCR units is consistent across all of these legacy companies
15 that make up Duke Energy today, and consistent with the industry.

16 **III. NEW REQUIREMENTS REGARDING CCR AND ASH BASINS**

17 **Q. PLEASE DESCRIBE THE CCR COAL ASH REGULATORY**
18 **REQUIREMENTS.**

19 A. The CCR compliance requirements described below represent new regulatory
20 requirements that have significantly changed the operation and life cycle of the
21 onsite ash basins and ash landfills. The Company must comply with the CCR
22 Rule, South Carolina coal ash Consent Agreements and closure plans, CAMA in
23 North Carolina, and other agreements and court orders concerning the

1 management and disposal of CCR, operation and closure of CCR units, and
2 corrective action and post-closure care.

3 **Q. PLEASE SUMMARIZE THE MAJOR REQUIREMENTS UNDER THE**
4 **CCR RULE.**

5 A. The purpose of the CCR Rule is to protect groundwater and water quality near
6 CCR units and ensure stability of those units. The EPA's final CCR Rule
7 established national minimum criteria for CCR landfills and surface
8 impoundments that consist of: (1) location restrictions; (2) design and operating
9 criteria; (3) groundwater monitoring and corrective action; (4) closure
10 requirements and post-closure care; (5) recordkeeping; (6) notification; and (7)
11 Internet posting requirements. These requirements are summarized below, and
12 they result in different impacts at each CCR unit, depending on site-specific
13 factors.

14 The CCR Rule requires that new and existing CCR surface impoundments
15 and new CCR landfills and lateral expansions meet location restrictions for:
16 (1) placement above the uppermost aquifer; (2) wetlands; (3) fault areas;
17 (4) seismic impact zones; and (5) unstable areas. If a CCR basin does not meet
18 the location restrictions, then basin closure is required under the CCR Rule. The
19 specific location restriction assessments that are most likely to affect the
20 Company's CCR basins, because of typical geological characteristics and historic
21 groundwater elevations in the Carolinas, are placement above the uppermost
22 aquifer and wetlands.

1 The placement above the uppermost aquifer location restriction requires
2 that existing CCR basins be constructed with a base that is located no less than
3 1.52 meters (five feet) above the upper limit of the uppermost aquifer or
4 demonstrate that there will not be an intermittent, recurring, or sustained
5 hydraulic connection between any portion of the base of the CCR unit and the
6 uppermost aquifer due to normal fluctuations in groundwater elevations
7 (including the seasonal high water table).

8 The wetlands location restriction considers whether the CCR unit causes
9 or contributes to significant degradation to wetlands, and in the event of such
10 effects, sets out compensatory steps that may be taken to achieve no net loss of
11 wetlands in order to avoid basin closure.

12 The CCR Rule contains design criteria for new CCR landfills and lateral
13 extensions and new CCR surface impoundments, as well as structural integrity
14 criteria for new and existing CCR surface impoundments, including an
15 assessment of dam safety factors.

16 The CCR Rule contains operating criteria for fugitive dust control, run-on
17 and run-off controls for landfills, hydraulic capacity requirements for surface
18 impoundments, and inspection requirements for landfills and surface
19 impoundments. If the ash basin dam does not achieve the minimum factor of
20 safety requirements, then ash basin closure is required. The CCR Rule also
21 contains requirements for the assessment of groundwater impacts from CCR
22 landfills and surface impoundments. It provides requirements for the assessment
23 of corrective measures, selection of remedies, and implementation of corrective

1 action programs for identified groundwater impacts. Results of the groundwater
2 assessment may also require ash basin closure.

3 The CCR Rule contains requirements for how and when CCR basins must
4 be closed. It provides two alternatives for closure, “closure by leaving ash in
5 place” and “closure through removal of the CCR,” also referred to as excavation.
6 In the case of closure by leaving ash in place, commonly referred to as “cap-in-
7 place,” it provides design criteria for the closure cap system. Post-closure
8 monitoring requirements are also detailed in the CCR Rule. Lastly, the CCR Rule
9 requires specific notifications, such as to state agencies; specific requirements for
10 record keeping, such as the written operating record; and, also, specific
11 requirements for posting information on a publicly accessible Internet site.

12 **Q. HOW ARE CCRS CLASSIFIED UNDER THE CCR RULE?**

13 A. As stated in the CCR Rule, the EPA considers CCR to be a non-hazardous solid
14 waste.

15 **Q. HOW IS THE CCR RULE ENFORCED?**

16 A. The CCR Rule was promulgated as a self-implementing rule that could only be
17 enforced by citizen suit and not by administrative measures. However, the Water
18 Infrastructure Improvements for the Nation Act (WIIN Act), which was signed
19 into law in December 2016, gave the EPA immediate direct enforcement
20 authority, authorized states to establish permit programs for implementing the
21 CCR Rule, and required the EPA to do so, conditioned on federal funding, in
22 those states that do not adopt a CCR permit program.

1 **Q. TO WHICH DE PROGRESS UNITS DOES THE CCR RULE APPLY AND**
2 **WHY?**

3 A. Pursuant to Section 257.50(b) of the CCR Rule, the requirements of the CCR
4 Rule apply to all owners and operators of new and existing landfills and surface
5 impoundments, including any lateral expansions of such units that dispose or
6 otherwise engage in solid waste management of CCR generated from the
7 combustion of coal at electric utilities and independent power producers.
8 Pursuant to Section 257.50(c), the CCR Rule also applies to inactive CCR surface
9 impoundments at active electric utilities or independent power producers,
10 regardless of the fuel currently used at the facility to produce electricity. When
11 the CCR Rule was promulgated, it contained a provision that excluded “legacy”
12 impoundments and CCR landfills at sites where the utility had ceased producing
13 electricity prior to October 19, 2015, the effective date of the CCR Rule. *See*
14 Section 257.50(e). Two legacy impoundments at one DE Progress coal-fired
15 generating site – the Cape Fear Plant – qualified for exemption under Section
16 257.50(e). The issue of whether the CCR Rule must apply to impoundments at
17 power plant sites that have ceased generating electricity was litigated in the D.C.
18 Circuit Court of Appeals in *Util. Solid Waste Activities Group, et al., v. Env’tl.*
19 *Prot. Agency*, 901 F. 3d 414 (D.C. Cir. 2018) (“*USWAG v. EPA*”). In that case,
20 environmental petitioners asserted that there was no rational basis for excluding
21 impoundments at inactive plants given that the CCR Rule covers inactive
22 impoundments at active facilities and, therefore, impoundments such as those at
23 the Cape Fear Plant must be regulated pursuant to RCRA. In the recently issued

1 decision, the court agreed with the position of the environmental petitioners and
2 determined that the EPA's decision to exclude legacy impoundments from the
3 CCR Rule was "arbitrary and capricious." The EPA is expected to undertake an
4 expedited rulemaking to bring these legacy impoundments into the CCR Rule.
5 Accordingly, as a result of the D.C. Circuit Court of Appeals' decision, the CCR
6 Rule will apply to all DE Progress Sites.

7 **Q. IN ADDITION TO THE CCR RULE AND CAMA, IS THE COMPANY**
8 **SUBJECT TO SPECIFIC SOUTH CAROLINA COMPLIANCE**
9 **OBLIGATIONS CONCERNING THE MANAGEMENT OR**
10 **REMEDICATION OF CCR?**

11 A. Yes. DE Progress has other CCR-related obligations that result from South
12 Carolina environmental regulatory oversight under existing rules and regulations.
13 For DE Progress in South Carolina, there is one Consent Agreement with the
14 SCDHEC applicable to ash management at the Robinson Plant. The Robinson
15 Consent Agreement (15-23-HW) between DE Progress and SCDHEC requires
16 ash excavation of a 1960 lay-of-land ash storage area located south of the ash
17 basin. SCDHEC has also approved DE Progress' plan to excavate ash from the
18 Robinson Plant ash basin. This Consent Agreement includes provisions requiring
19 DE Progress to initiate permitting of an onsite lined CCR landfill to store the
20 excavated ash from the Robinson Plant's ash basin and lay-of-land area. As of
21 September 2018, DE Progress is in the process of preparing for construction of
22 the onsite landfill.

1 **Q. PLEASE BRIEFLY SUMMARIZE THE MAJOR REQUIREMENTS**
2 **UNDER CAMA.**

3 A. CAMA requires closure of all ash basins in North Carolina, with the closure
4 option and closure deadline driven by a prioritization risk ranking classification
5 process. CAMA requires that all CCR ash basins be closed by dates ranging from
6 2019 to 2029. The law requires the cessation of storm water flows to CCR ash
7 basins and conversion to dry ash handling. Groundwater wells are required along
8 with monitoring and post-closure maintenance programs. CAMA also requires
9 that the Company provide permanent water supplies to all homeowners within an
10 established boundary of the ash basins. Lastly, the Company must install and
11 operate three ash beneficiation projects capable of annually processing 900,000
12 tons (300,000 tons from each site) of ash stored within the impoundments at the
13 site to specifications appropriate for cementitious products.

14 **Q. HOW IS CAMA ENFORCED?**

15 A. CAMA implementation in North Carolina is overseen by the North Carolina
16 Department of Environmental Quality (“NCDEQ”), which has enforcement
17 authority over CAMA compliance issues.

18 **Q. TO WHICH DE PROGRESS FACILITIES DOES CAMA APPLY AND**
19 **WHY?**

20 A. CAMA applies to all of DE Progress’ CCR surface impoundments in North
21 Carolina located at seven coal-fired generating sites.

1 **Q. SINCE CAMA ONLY APPLIES TO THE COMPANY'S NORTH**
2 **CAROLINA FACILITIES, HOW IS IT RELEVANT TO THIS SOUTH**
3 **CAROLINA RATE PROCEEDING?**

4 A. South Carolina customers receive the benefit from electricity generated at DE
5 Progress' South Carolina and North Carolina plants, therefore, South Carolina
6 customers should also share costs from the generation process of electricity
7 production in both South Carolina and North Carolina. This issue is addressed in
8 greater detail in the direct testimony of Company Witness Wright.

9 **Q. DO THE CCR RULE, SOUTH CAROLINA REGULATORY POLICY,**
10 **AND CAMA REQUIRE CLOSURE OF THE COMPANY'S CCR BASINS?**

11 A. Yes. Under one or a combination of the above-listed federal and state regulatory
12 regimes, the Company will be required to close all of its CCR basins.

13 **Q. HOW DO THE CCR RULE AND STATE REGULATORY**
14 **REQUIREMENTS WORK TOGETHER TO ADDRESS MANAGEMENT**
15 **AND REMEDIATION OF THE COMPANY'S CCR BASINS?**

16 A. The CCR Rule requires DE Progress to comply with minimum national criteria,
17 as well as applicable state laws, in the closure of ash basins. Thus, the CCR Rule
18 provides overarching requirements pursuant to which each state may set forth
19 more specific regulations. However, as long as minimum national criteria are
20 satisfied, the CCR Rule does not specify a particular method for closing ash
21 basins. Thus, the CCR Rule leaves to the states to approve the method of ash
22 basin closure, as long as such method meets the timeframes and minimum
23 requirements set forth in the CCR Rule. In North Carolina, the method of closure

1 required under the CCR Rule will be selected through the process set forth in
2 CAMA. In addition, CAMA requires the submittal of detailed Corrective Action
3 Plans (“CAPs”) to NCDEQ to address groundwater impacts. CAMA sets forth
4 specific closure methods which are consistent with the CCR Rule’s minimum
5 national criteria for sites deemed intermediate risk. The CCR Rule regulates CCR
6 landfills in addition to CCR surface impoundments, whereas CAMA only
7 addresses CCR surface impoundments. Finally, South Carolina has required
8 utilities to excavate ash storage areas, which are exempt from CCR Rule
9 applicability because they ceased receiving CCR prior to the effective date of the
10 rule.

11 **Q. ARE THERE SOME SITES TO WHICH THE CCR RULE APPLIES, BUT**
12 **NOT TO EACH SPECIFIC CCR BASIN AT THAT SITE?**

13 A. Yes. The CCR Rule does not apply at historical inactive ash basins that contain
14 CCR but had no liquids on or after October 19, 2015. For example, at the H.F.
15 Lee Plant site, three basins referred to as Ash Basin 1, Ash Basin 2, and Ash
16 Basin 3 are not subject to the CCR Rule because these inactive ash basins were all
17 dry as of the effective date of the CCR Rule. However, at the same H.F. Lee
18 Plant site, the 1982 Active Ash Basin is subject to the CCR Rule because it
19 contained CCR and liquids on October 19, 2015. Please refer to Kerin Exhibit 5
20 for a detailed breakdown of DE Progress’ ash basins in the Carolinas and which
21 ash basins are subject to the CCR Rule.

1 **Q. IN ADDITION TO THE CCR RULE, SOUTH CAROLINA OVERSIGHT,**
2 **AND CAMA, IS THE COMPANY SUBJECT TO ANY OTHER**
3 **REGULATORY COMPLIANCE OBLIGATIONS CONCERNING THE**
4 **FUTURE MANAGEMENT OR REMEDIATION OF CCR?**

5 A. Yes. DE Progress is subject to a settlement agreement with DEQ. The Settlement
6 Agreement dated September 29, 2015, between DEQ and DE Progress requires
7 that remedial action as otherwise required to address groundwater impacts from
8 ash basins be accelerated at four North Carolina sites. It specifically requires the
9 installation and operation of extraction wells on the eastern portion of the Sutton
10 Plant property where groundwater exceeds the NCAC Title 15A Subchapter 2L
11 water quality standard.

12 The DEQ Settlement Agreement also requires accelerated remediation at
13 the Asheville Plant and the H.F. Lee Plant. The Settlement Agreement states that,
14 for these two sites, the accelerated remediation can be tailored to each facility's
15 unique characteristics.

16 **Q. PLEASE EXPLAIN HOW THE COMPANY IS COMPLYING WITH ITS**
17 **COAL ASH REGULATORY OBLIGATIONS INCLUDING THE CCR**
18 **RULE, SOUTH CAROLINA OVERSIGHT, AND CAMA.**

19 A. DE Progress has reviewed and inventoried the applicable requirements to
20 determine the full scope of required actions to be taken by the Company, and the
21 limitations and/or constraints imposed by some of those requirements. The
22 Company intends to complete the most limiting actions by the earliest applicable
23 due dates across these various compliance regulatory drivers. Required actions

1 and due dates are routinely monitored in various Duke Energy management
2 meetings in the CCP organization.

3 As an example, both CAMA and the CCR Rule require the development
4 of ash basin closure plans. CAMA, however, is more granular in the required
5 level of detail to be included in the narrative of the proposed closure plan as
6 compared to the CCR Rule. Conversely, the CCR Rule has a more limiting due
7 date for development of the ash basin closure plans. Therefore, for sites to which
8 both the CCR Rule and CAMA are applicable, the less granular closure plans
9 were developed to meet the CCR Rule's required due date of October 2016, while
10 more detailed closure plans are separately being developed to meet the exacting
11 requirements of CAMA by the December 2019 deadline.

12 As discussed above, the CCR Rule requires DE Progress to comply with
13 minimum national criteria, as well as any applicable state laws, in the closure of
14 ash basins. Thus, the CCR Rule leaves to the states to approve the method of ash
15 basin closure, as long as such method meets the timeframes and minimum
16 requirements set forth in the CCR Rule. In South Carolina, the method of closure
17 required under the CCR Rule was selected based on coordination with and
18 oversight by SCDHEC. In North Carolina, CAMA risk rankings and any other
19 DEQ applicable requirements may dictate a specific closure approach such as ash
20 basin closure by excavation.

21 In addition to closure requirements, Duke Energy is complying with the
22 other CCR Rule requirements at its facilities in South Carolina, including its

1 groundwater monitoring and corrective action, recordkeeping, notification, and
2 Internet posting requirements.

3 Again, the Company will complete the most limiting action with respect to
4 closure method and timeframe.

5 **IV. DUKE ENERGY'S COMPLIANCE PLANS**

6 **Q. HOW DO THE REQUIREMENTS UNDER THE CCR RULE, SOUTH**
7 **CAROLINA OVERSIGHT, AND CAMA AFFECT THE COMPANY'S**
8 **COAL-FIRED PLANTS?**

9 A. The CCR compliance requirements affect how the coal-fired power plants operate
10 and effectively require the coal ash basins to be retired. With regard to ash basin
11 operation, modifications to the power plants are required to direct storm water
12 flow away from the ash basins and to cease bottom ash and fly ash sluice flow to
13 the basins. As the ash basins are closed, other process streams, such as low-
14 volume wastewater, coal pile run-off, and FGD blowdown flows, must also be
15 directed away from the ash basins to facilitate de-watering and closure. As
16 detailed earlier in this testimony, the CCR Rule, South Carolina oversight, and
17 CAMA require closure of the ash basins; the timing and approach of these
18 closures are dictated by the most limiting regulatory requirement.

19 **Q. PLEASE DESCRIBE THE COMPANY'S ACTIVITIES UNDERTAKEN**
20 **PURSUANT TO CCR REGULATORY OBLIGATIONS?**

21 A. For each site, preliminary engineering and design work was performed to
22 determine the best ash basin closure option for the site as well as permitting
23 needs. Ash basin closure requires the removal of all in flows to the basin such as

1 sluiced ash, process water, and storm water prior to ash basin closure options of
2 excavation, cap in place, and/or beneficiation.

3 DE Progress' approach for closing specific CCR units has evolved over
4 time to meet the changing state and federal regulatory landscape. State-specific
5 regulatory obligations, such as the Robinson Consent Agreement and CAMA,
6 provided additional clarity for developing closure options. Additionally, technical
7 investigations of groundwater, dam stability, and environmental concerns has
8 continued to inform the Company's decision-making.

9 For both state and federal regulatory obligations, a ground water
10 monitoring program has been established. This includes the installation of
11 numerous groundwater wells and well monitoring for at least 30 years following
12 basin closure.

13 To comply with the federal CCR Rule's mandates on stopping flows to the
14 ash basins, many sites required modifications to convert to dry ash handling, new
15 or additional wastewater treatment, and rerouting of storm and process water
16 handling. These activities are largely complete at the DE Progress sites.

17 Once the basin in flows are stopped, the ash basin can then be closed by
18 excavation, cap in place, and/or beneficiation, depending on engineering and
19 scientific analysis and regulatory requirements. For any of the closure methods,
20 the basin water must be treated and removed. Site Closure Plans and Site
21 Analysis and Removal Plans have been developed for each site and are attached
22 to my testimony as Kerin Exhibit 9. Kerin Exhibit 8 provides illustrations of the
23 technical approaches to the excavation and cap-in-place closure methods.

1 **Q. HAS THE REASONABLENESS AND PRUDENCY OF THE CLOSURE**
2 **OPTIONS THAT THE COMPANY HAS SELECTED FOR EACH SITE**
3 **BEEN FULLY EVALUATED AND SCRUTINIZED IN A PRIOR RATE**
4 **PROCEEDING?**

5 A. Yes. As I mentioned earlier, I testified on behalf of DE Progress in its North
6 Carolina rate case that was filed in 2017. Certain intervenors to the case hired
7 engineering consultants to review and critique the Company's decision-making
8 with regard to its selected CCR compliance options. The North Carolina Utilities
9 Commission held that DE Progress' selected closure options were reasonable and
10 prudent, with only limited exceptions. As an appendix to my testimony, I am
11 providing site-by-site summaries of each DE Progress site, which include
12 historical background, an explanation of the Company's selected closure option,
13 and an overview of the issues raised and decided in the North Carolina rate case.
14 *See Appendix.*

15 **Q. CAN YOU PLEASE PROVIDE THE COMPLIANCE COSTS RELATED**
16 **TO ASH POND CLOSURE REQUESTED FOR RECOVERY IN THIS**
17 **CASE?**

18 A. DE Progress reasonably and prudently incurred and expects to incur a total of
19 \$526.4 million (on a system basis) related to incremental ash pond closure
20 compliance costs from July 2016 through December 2018. Company Witness
21 Bateman describes the calculation of and the recovery requested related to this
22 deferred balance. These current and expected compliance activities are

1 reasonable, prudent, and cost-effective solutions given the individual
2 characteristics of each CCR plant and basin site.

3 **Q. HAS THE COMPANY IDENTIFIED ANY COSTS THAT IT WILL NOT**
4 **BE SEEKING FROM SOUTH CAROLINA CUSTOMERS?**

5 A. Yes. The Company will not be seeking from South Carolina customers certain
6 costs that are associated with the provision of drinking water to North Carolina
7 residents. These costs include the provision of bottled water and permanent
8 drinking water supplies, *e.g.*, connection to a public water supply or filtration
9 systems. The Company has decided to absorb the share of these costs that the
10 North Carolina Utilities Commission ordered should be allocated to South
11 Carolina.

12 **Q. HOW, IF AT ALL, DO THE COMPANY'S HISTORICAL CCR**
13 **PRACTICES IMPACT THE COMPLIANCE COSTS THAT DE**
14 **PROGRESS IS SEEKING IN THIS PROCEEDING?**

15 A. They do not affect them at all. I make clear in prior sections of my testimony that
16 DE Progress' historical handling of CCRs was reasonable, prudent, and consistent
17 with industry standards over time. These facts are important to show that nothing
18 that DE Progress has done historically is causing the Company to incur any
19 unjustified costs today to comply with coal ash regulatory requirements.

1 **Q. REGARDING THE ASH POND CLOSURE COSTS ALREADY**
2 **INCURRED OR EXPECTED TO BE INCURRED PRIOR TO DECEMBER**
3 **2018, WHAT DO THOSE COSTS COMPRISE AND WHY ARE THEY**
4 **REASONABLE AND PRUDENT COSTS?**

5 A. In Kerin Exhibit 10, I have broken these costs down into their core components
6 and have described the plants to which these costs apply. In detailing these costs,
7 I have also provided narrative summaries as to why these costs were incurred and
8 why the compliance actions that led to those costs were the most reasonable and
9 cost-effective options given the applicable facts and circumstances. This exhibit,
10 coupled with the balance of my testimony and exhibits, demonstrate that these
11 costs are reasonable and prudent.

12 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

13 A. Yes.